

THE RAMTOP

NOVEMBER

1985

Sir Clive Sinclair SAYS !!!!!!!!!!!!!!!



All of you RAMTOP readers are experts in many computer fields. Please send in your articles so we can all share in your knowledge. Send to:

James G. DuPuy
6514 Bradley Ave. (DOWN)
Parma, Ohio 44129
PHONE: 216-661-4105

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SYSOP - Chris Raynak
PHONE - 1-327-1099
UP-LOAD & DOWN-LOAD GAMES and
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PARAMETERS - 8/2/N
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EVERY FIRST FRIDAY EACH MONTH
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A short note to our friends from other newsletters and magazines. You are welcome to use any of our material, news, ads, or programs if YOU: (1) Tell where it came from (RAMTOP Cleveland, Ohio) and (2) The author's name that wrote the article. We would appreciate it if you would send us a copy of the newsletter that it appeared in! Unless otherwise notified we will do the same.

THANK YOU FOR YOUR INTEREST IN OUR NEWSLETTER !

T/S RESOURCES

news/rumors
hardware software literature
Nov. 1985 by Andy Kosiorek

DISKOMANIA

Disk Drive talk has taken over the CIS T/S message board. There are at least 5 different DD interfaces currently on the market for the 2068. So far the present it unfortunately looks like there will be no common disk standards for T/S users.

The best DOS appears to be the Portugese version. At the present time Zebra is the only vendor for this system. Current Zebra price is \$350 for the interface and one drive. As far as I know all of the 2068 interfaces will not work in the Spectrum mode. But some fixes may eventually be developed. T/S users are a resourcefull group.

In England there now are numerous Spectrum disk interfaces available. You can purchase a Kempston Spectrum disk interface from English Micro Connection for \$130. Works with any Shugart type drive. EMC's excellant new catalog gives a complete description.

Supply of 3" disks is tight at the moment. However there appears to be at least one vendor in each large metropolis. Prices vary considerably. The vendor I found in Cleveland had the highest price.

Amstrad in England has come out with 3 new Computers with built in 3" drives. They are planning to market them in the U.S. which may eventually improve the supply of 3" disks.

A new QL, at about £400 may be introduced in '86. Rumors say it may have a onboard 3" disk drive in lieu of the microdrive.

128K SPECTRUM

Rumors say that the 128K Spectrum will be available in late '86, at about £200. It will have two display modes, a joystick port, and sound chip. Hmm, where else have we seen these specs. It is said that the 128K memory will be banked switched in 64K chunks. Perhaps after we see how Clive does it we will be able to apply the method to the 2068.

T/S RESOURCES - continued

The QL's

Sinclair Research has finally released the QL to US vendors. Price for the US model is about \$300 from English Micro or Curry Computer. In England their model is selling for £200.

KEYBOARDS

Would you like a better keyboard for your 2068. There is a large selection of after market ones available in the U.K. The Sept. issue of SUM Magazine has a review of four models and how to adapt them to the 2068. Keyboards can be purchased from English Micro or E.B. Brown.

SOFTWARE PIRACY

The Oct. issue of Sinclair User Magazine has an interesting 2-1/2 page article on this subject and the UK software houses attempts to control it. One method is a "Lenslock" system. Each software program comes with one custom lense, configured to one program only. At the start of the program the software displays a random code on the screen, which can only be read thru the lense. The program will not run until the random code is entered. Backup copies of the software are useless unless you have the lense supplied with the program.

FOR SALE

Boys 10 speed BICYCLE
24" wheels, ideal for
a short person.
Good condition. \$50.00

2068 MODEM, Byte Back
model MD-68, used very
little. Now selling for
\$150.00, asking \$75.00

Keyboard, mechanical,
for ZX-81/TS-1000, with
key legends, metal case,
computer board fits
inside. \$25.00

contact Andy Kosiorek
216-226-4503

Howdy to all! The world of Sinclair (and Timex) still lives on! In fact, it is GROWING! Our group is also growing! WELCOME to all of our new FRIENDS! If any of you ever need any help with any of your computer needs please feel free to call one of of your fellow members. This also goes for all of you in our group. My number is 661-4105. If I can't help you, I will steer you to someone who can. Please call between 5pm to 10pm. I have some great news! One of our new members, Mr. Al Gedris, has volunteered to take a crack at printing our RAMTOP! I will still be doing the editing. PLEASE, PLEASE get those articles in!!! As you all well know, we totally depend on YOUR articles to make this publication what it is. I know that many of you have a lot of talent and I know that all of us would greatly appreciate any contribution you send in! We seem to have been lacking in articles for the 1000/1500 lately. You will see some in this issue. Last month at the westside meeting, we had a meeting of the Board of Directors. We have found that to continue to keep our group running properly, we will have to raise the dues to \$15.00 per year or \$7.50 per 6 months. This will be in effect as of the first of Nov.

We will be in the near future, setting up a program library as well as a literature library. If you have any suggestions about setting it up or operating, please bring it up at your meeting or give me a call. I personally feel that tapes should not be lent out but simply copied. This way there is no way of losing them. Books and newsletters are a bit tougher to do this, but it would be a big help if we could get copies of the newsletters. If we could all get copies of articles that we know that others don't have and pool them together, I know that we could have quite a good library!

We will be having a raffle for a device that will make using your cassette recorders MUCH easier to use! It has a switch that will allow you to switch loading from either of two recorders, a switch that will let you save to either of two recorders, do tape to tape copies, and best of all, it has a lighted level METER! This means that you can see the actual level that your recorder is putting out! It will also have an LED that will show when the level is high. Also, please note that: 1- This unit will allow you avoid plugging and unplugging all the time, and 2- It will work equally as well with ALL Timex and Sinclair computers!(ZX-81, 1000, 1500, 2068, Spectrum, Spectrum+) The cost is only \$1.00 per ticket! This unit is worth over \$30.00! Tickets will be sold at the meetings or you may send a check to Robert Parish (our Treasurer) 12706 Leeila Ave., Cleveland, Ohio, 43135. His phone # is: 671-6922. Checks should be made payable to the "RAMTOP".

I got a letter from Chris Raynak today. He has been checking out disc drives. I will give you a brief overview. 1- Zebra does have drives in stock. 2- The drives will work with the 2068 ROM ONLY. This means that you can't save any Spectrum software. 3- The drive supplied stores 160K only. The 80 track drive that was announced was never released. 4- There is NO documentation supplied as far as wiring is concerned. This means that you CAN'T hook up a standard drive. Many have been returned to Zebra because of this and; 5- Zebra WON'T take systems back for warranty if you try it! Chris also said that Microsystems BBS in Florida has given up on Timex. He says that you all better take advantage of the TSU before it too has to disappear.

James G. DuPay

From JIM LEWIS
372 Montrose Ave.
Akron, OH. 44310
(216) 535-5485

FOR SALE: The Sam's Beginner and Intermediate books- \$5.00 each.
TS-1000 with 16K, 2040 printer, Programs: Make offer.
Security Light- 375 watt mercury vapor with 30 ft rustproof pole, wire, and new bulb: \$50.00
Two cars; 71 Pinto, needs clutch, 74 Chrysler Newport, many new parts. \$150.00 each.

If you have an ad, send it in and it will be printed in the next RAMTOP. I had a sheet of ads that was misplaced. If it was yours, please forgive me. Send it in again and I will get in the Dec. issue.

This was sent to me from THEO TURK. It was written by Paul Newman, 3 Red House Lane, Leiston, Suffolk, IP164jz, UK.

This routine extracts the SAVE name from the program much in the same way as Spectrum program header readers. Using a simple HEX loader program from any good ZX-81 or 1000 book or magazine, load the contents of D\$ into a REM line 1. When loaded and checked, delete the loader program and add line 2.

To read a program name, just position the tape at the beginning of the 5 sec. silence, RUN the program and play the tape. The name will appear on your screen as soon as it's read. I have a listing that I used on my 1500. It will work on a 1000 or ZX-81 also. I don't see any reason why it wouldn't also work on a 1000 without the 16K RAM. When you type it in, make sure that your listing is EXACTLY like this first one! A mistake of ONE character will cause a "crash"! I hope you like this! Let me know what you think!

```

1 REM 12345678901234567890123
45678901234567890123456789012345
678901234567890123
5 LET D$="CD230FCD8A4018FB0E0
106003E7FDBFED3FF1FD2A2031717381
110F1F1CD8A40CB7A792001D71730F41
81DD51E94061A1DDDBFE17CB7B7B38F51
0F5D12004FE5630C83FCB1130C3C9C9"
10 LET X=16514
15 LET Y=1
20 FOR N=X TO X+(LEN D$)/2-1
30 POKE N,16*CODE D$(Y)+CODE D
$(Y+1)-476
35 LET Y=Y+2
40 NEXT N

```


THIS IS WHAT IT LOOKS LIKE AFTER YOU RUN IT.

```

1 REM LN 77LN RAND/CLS :Y
2<= RETURN PEEK COPY 3ABS :Y
( LET LN RANDACS 774 NOT *K
POKE /1STR$ 25,1<= RETURN *ACS
??S PRINT ( PRINT SGN 4 RETURN
?KCOS ZACS )K?TAN TAN
5 LET D$="CD230FCD8A4018FB0E0
106003E7FDBFED3FF1FD2A2031717381
110F1F1CD8A40CB7A792001D71730F41
81DD51E94061A1DDDBFE17CB7B7B38F51
0F5D12004FE5630C83FCB1130C3C9C9"
10 LET X=16514
15 LET Y=1
20 FOR N=X TO X+(LEN D$/2)-1
30 POKE N,16*CODE D$(Y)+CODE D
$(Y+1)-476
35 LET Y=Y+2
40 NEXT N

```

NOW DELETE LINES 5 ON SO IT LOOKS LIKE THIS.

```

1 REM LN 77LN RAND/CLS :Y
2<= RETURN PEEK COPY 3ABS :Y
( LET LN RANDACS 774 NOT *K
POKE /1STR$ 25,1<= RETURN *ACS
??S PRINT ( PRINT SGN 4 RETURN
?KCOS ZACS )K?TAN TAN

```

NOW ADD LINE 2 SO IT NOW LOOKS LIKE THIS.

```

1 REM LN 77LN RAND/CLS :Y
2<= RETURN PEEK COPY 3ABS :Y
( LET LN RANDACS 774 NOT *K
POKE /1STR$ 25,1<= RETURN *ACS
??S PRINT ( PRINT SGN 4 RETURN
?KCOS ZACS )K?TAN TAN
2 RAND USR 16514

```

NOW PRESS PRESS THE "X" KEY AND PRESS ENTER. THEN SAVE THE PROGRAM BY ENTERING DIRECTLY: SAVE "HEADER".

THE NEXT GOODY HERE IS FOR THE 2068.(Actually,I see no reason why it wouldn't run on a 1000/1500) THIS WAS SENT IN BY FRIEND MAX SCHOENFELD.

Computers are excellent at number crunching. Here is a program that makes use of this ability.

IRA's (Individual Retirement Accounts) are good - for those who can afford them. At present you can put up to \$ 2000 a year into such an account, and reduce your taxable income by the amount of your deposit. You can not withdraw any money until the year in which you become 59 1/2, without suffering a penalty. Many banks have displayed ads telling how much you will have at retirement age, assuming a given rate of interest. Banks offer various options for the systematic rate of withdrawal of funds, but no such information has been advertised.

This program provides for a uniform rate of withdrawal. You must state the beginning amount (how much you have accumulated); the assumed rate of interest (a guess on anyone's part); and the number of years of pay-out (must be equal or less than your life expectancy at retirement).

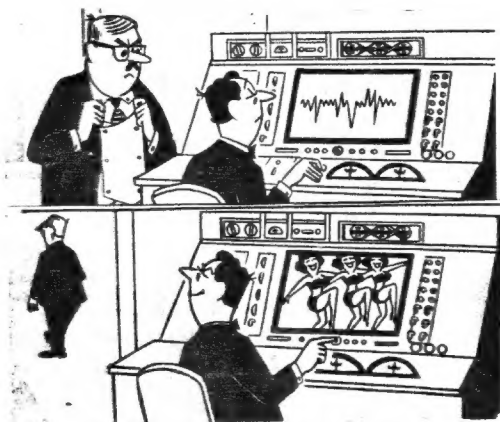
The process is called iteration. The amount of annual pay-out is first estimated by the variable, "c," and then the process is repeated until the balance left after the last payment is within one dollar of zero.

The first display shows the amount left after the last pay-out, alongside the annual payment. The second display shows the balance of funds for each year once the pay-out amount has been established.

```

10 REM "IRA"
15 REM - by Max Schoenfeld
20 INPUT "How much money to start? $ ";a
30 INPUT "Expected interest rate? ";b
40 INPUT "How many years to pay out? ";d
50 PAUSE 50: PRINT "This table shows how much money remains in the account after ";d;" years, with the amount of annual withdrawal."
100 PRINT : PRINT
110 LET c=a/10
120 DIM a(d+1)
125 FOR x=2 TO d+1
130 LET a(1)=a
140 LET a(x)=a(x-1)*(b+1)-c
150 NEXT x
160 PRINT a(d+1);TAB 12;c
200 LET c=c+a(d+1)/(2*d)
205 IF a(d+1)<=1 AND a(d+1)>=-1 THEN GO TO 300
210 GO TO 125
305 PRINT : PRINT "Balance by year, after paying out ";c-(a(d+1))/(2*d);" each year"
307 FOR x=2 TO d+1
310 PRINT (x-1);TAB 10;a(x)
320 NEXT x
330 PRINT : PRINT "Total pay-out is $ ";d*(c-(a(d+1))/(2*d))

```



Max's program continued:

Below is an example of how the program works. Start with \$ 20000 in the account. Assume an interest rate of .08. Plan for a 20 year pay-out.

This table shows how much money remains in the account after 20 years, along with the amount of annual withdrawal.

1695.2143	2000
-244.19408	2042.3804
35.175967	2036.2755
-5.067121	2037.1549
0.72983313	2037.0282

Balance by year, after paying out 2037.0282 each year

1	19562.972
2	19090.981
3	18581.232
4	18030.702
5	17436.13
6	16793.992
7	16100.483
8	15351.493
9	14542.585
10	13668.963
11	12725.452
12	11706.46
13	10605.949
14	9417.3963
15	8133.7598
16	6747.4323
17	5250.1987
18	3633.1863
19	1886.813
20	0.72983313

Total pay-out is \$ 40740.565

THE NEXT TWO SHORT PROGRAMS WERE SENT IN BY OUR FRIEND WILLIAM WALKER.

```

5 REM TYPESET PRINTOUT
10 PRINT "TYPESET...ENTER TEXT"

20 INPUT A$
25 CLS
30 PRINT A$
40 PRINT AT 20,0;"ENTER:RND1 T
D,LPRINT ,2 TO SAVE      3 TO LOA
D,9, TO START AGAIN."
50 IF INKEY#="" THEN GO TO 50
60 IF INKEY#="1" THEN GO TO 10
0
70 IF INKEY#="2" THEN GO TO 20
0
80 IF INKEY#="3" THEN LOAD ""
90 IF INKEY#="9" THEN GO TO 30
0
95 GO TO 50
100 LPRINT A$
110 GO TO 25
210 CLS
220 PRINT AT 20,0;"SET RECORD,
THEN
230 PAUSE 4E4
240 SAVE "TYPESET"
250 GO TO 25
300 CLS
310 RUN

```

HUNTINGTON WV.
OCT 14,1985

```

1 REM **DELETE LINE 1**This is
a SAMPLE!!!-OF screens to use to
dress up a program--EXPERMINT??
?.**
3 PRINT "
4 FOR I=1 TO 20
5 PRINT "THIS IS GOOD
6
9 NEXT I
15 PRINT "
17 PAUSE 200
9002 CLS : GO TO 9005
9005 FOR X=0 TO 20
9008 PRINT AT X,0;"
9010 NEXT X
9015 FOR X=2 TO 18
9020 PRINT AT X,7;"
9025 NEXT X
9030 FOR X=0 TO 20
9035 PRINT AT X,0;"
9040 PRINT AT X,30;"
9045 NEXT X
9050 PRINT AT 0,0;"
9055 PRINT AT 20,0;"
9060 FOR X=4 TO 6
9065 PRINT AT X,9;"
9070 NEXT X
9075 FOR Y=7 TO 17
9080 PRINT AT Y,11;" anything "
9085 NEXT Y
9093 PAUSE 100:
9095 CLS : GO TO 3

```

MICRODRIVES! BY DAVID HOSKOR

I finally did it. I bought an Interface 1 and Microdrive for my TIMEX/SINCLAIR with the Spectrum ROM. For those of you who are looking for a faster storage medium for your Timex - Sinclair / Spectrum, here is a run-down of my experience with the Microdrive.

As you probably know, the Microdrive cartridges contain an endless loop of magnetic tape. These cartridges are no larger than a book of matches. Each cartridge can hold 85 to 90 kilobytes of information. An entire circuit of the loop takes about 7 to 8 seconds. This makes for pretty fast loading.

To get started with Microdrives, you will need to get the ZX Spectrum Expansion System. This package contains a Microdrive, an Interface 1, and a bundled package of software including, Tasword 2, Masterfile, two games, an introductory cartridge and a spare cartridge along with a fairly detailed, well written manual. If, like me, you are using a TS-2068 with a Spectrum ROM, you will also need a Spectrum bus adapter to make the edgeboard of the 2068 the equivalent of the Spectrum. The cost for these items is \$135 for the Expansion Package and \$45 for the bus adapter from The English Micro Connection. The software alone is easily worth \$50, so it makes for an attractive deal.

USING THE MICRODRIVE

Using the Microdrive and the Microdrive commands is similar to using the regular cassette commands, but you MUST use a filename when LOADING or VERIFYING; no more LOAD "".

This is because a cartridge may contain many files. There is no way to determine which one is next on the tape.

In order to load, save, or verify a file, you must specify which Microdrive you are accessing. (There can be up to eight drives attached at once.) For example to load a file called "game", you would enter:

```
LOAD "*"1;"game"
```

LOAD is familiar enough, the "*"1;" is an extended BASIC command meaning load the file from Microdrive #1. The other Microdrive commands follow a similar syntax. Of course, the program "game" could have Microdrive commands imbedded within it to load other parts of the program. This is the beauty of the Microdrive, since it can turn itself on and off through software. There's no more reaching to turn the tape recorder on and off.

The extended BASIC commands are resident in the Interface 1. Other functions that you've noticed on the top row of keys, CAT, FORMAT, etc., are accessed from the Interface 1. CAT produces a CATALOG of the files on the Microdrive, and FORMAT prepares a new cartridge for writing, by marking parts of the tape as good or bad. The bad parts will be skipped over when the tape is written to.

FIRST IMPRESSIONS

There's no doubt about it, the Microdrives really speed up the Spectrum. Tasword 2 takes about 15 seconds to load, compared to about a minute and a half from cassette. 3D Ant Attack takes about 20 seconds to load, versus 4 minutes+ on cassette. This speed isn't without a price though.

Saving, and retrieving from Microdrive is fussier than the cassette. You must be sure to verify files that you save to be sure that they transferred to Microdrive correctly. It's almost a throwback to the bad old days of the ZX-81, but at least you have the verify command at your disposal. This takes a lot of the worry out of the SAVING and LOADING of Microdrives. I haven't had a SAVED and VERIFIED file fail to LOAD. Fortunately, most of the serious software that supports the Microdrives include verify options.

The cartridges are fairly fragile. You are warned not to touch exposed tape with your fingers, but you shouldn't do that with a cassette either. I got 20 cartridges at the time I bought the Microdrive. Two of them jammed almost immediately, but the rest of them seem to be okay so far. It seems that they improve with age. Fortunately, The English Micro Connection made good on the defective cartridge. (I kept one to take apart and use as a door on the Microdrive.)

Overall, I'm pleased with the Microdrive. The speed is really impressive, and I can live with the less than 100% reliability of SAVING and LOADING.

SOME OBVIOUS QUESTIONS ANSWERED

- 1) Can I use the 2068 with the Microdrive attached? Will the Microdrive work with the 2068?

No, because the Interface 1 contains an EXROM similar to the TS-2068, the TS-2068 gets confused and will crash with certain keystrokes when the Interface 1 is attached. For this reason, the Microdrive won't work with TS-2068. Just disconnect the Interface 1, and the 2068 works fine. (For some reason, the TS-2068 EXROM doesn't seem to bother the Interface 1.)

- 2) I've converted MTERM II to work on the Spectrum. Can I use it with the Microdrive attached?

Unfortunately, it doesn't work. The software fails to recognize that the modems are connected. (I've spoken to one user in Canada who says that MTERM II works, but the buffer keeps opening at unexpected times. Is it the difference in ROM's?) Again, the solution is to unplug the Interface 1.

- 3) Can Spectrum add-ons be used with the Microdrive?

Yes. Since the Spectrum Bus Adapter switches the edgeboard connector around to a Spectrum configuration, add-ons such as the Kempston Joystick Interface can be added. The Interface 1 continues the bus through the back of the unit.

- 4) What is the address of The English Micro Connection?

The English Micro Connection
15 Kilburn Court
Newport, Rhode Island 02840
tel. (401)-849-3805

David Hoshor

FLASH! A SPECIAL ANNOUNCEMENT!

As you all know, we don't have a Westside meeting in December. This year we would like to have all the Westsiders come to the Eastside meeting! We will have refreshments and have a nice little Christmas party! We are all friends and it would be really nice if we could all see each other at this Dec. meeting! It should be lots of fun.

We will also be having an auction. If you have any equipment, programs, or whatever, bring it over and let us bid on it. We will be putting a small percentage of the money into the treasury to try to build it up. I am hoping that enough of you will buy a ticket for the level/switch box so that we can announce the winner at the meeting. If not, it will wait till the Jan. meeting. If you have never been to an Eastside meeting, or if you have not attended a meeting lately, then PLEASE attend! I know you will be glad you did! **BE SURE TO MARK IT ON YOUR CALENDAR AND ATTEND! ALL OF YOU ARE WELCOME!!!** James G. DuPuy

```
5 REM ***This program by Eugene
  Wilson, Painesville, OH***
8 PRINT AT 0,7;"h=r-SQR (r+2-z+2)"; PRINT
10 PRINT "This equation solves
  ""h"" when ""h"" equals the
  rise or fall on a curve of known
  radius and a half cord named ""z""
  "; PRINT
20 PRINT "Enter radius"
25 INPUT r
30 PRINT AT 2,0;"r=";r;
```

```
40 PRINT AT 4,0;"Enter increment
  ""z"" to maximum ""z""";
45 LET z=0
50 REM **z=z increment**
60 INPUT z
70 PRINT AT 2,10;"z=";z
80 INPUT n
90 PRINT AT 2,15;"Max z=";n
100 PRINT AT 4,0;"Touch 1, 2, o
  r 3 for the number of decimal pl
  ces you need."
110 INPUT i
120 PRINT AT 2,25;i;" plcs"
130 PRINT AT 4,0;"
```

```
200 IF i<>1 THEN GO TO 230
210 LET i=10: GO TO 300
230 IF i<>2 THEN GO TO 270
240 LET i=100: GO TO 300
270 IF i<>3 THEN GO TO 100
280 LET i=1000
300 LET z=z+a
310 LET h=r-SQR ((r+r)-(z+z))
320 LET h=INT (h+i+.5)/i
330 PRINT "z=";z;"h=";h
340 IF z<n THEN GO TO 300
```

h=r-SQR (r+2-z+2)

This equation solves "h" when "h" equals the rise or fall on a curve of known radius and a half cord named "z"

Enter radius

h=r-SQR (r+2-z+2)

r=576

Enter increment "z" to maximum "z"

h=r-SQR (r+2-z+2)

r=576 z=2 Max z=30

Touch 1, 2, or 3 for the number of decimal places you need.

h=r-SQR (r+2-z+2)

r=576 z=2 Max z=30 3 plcs

I WILL LET YOU TYPE IN THE PROGRAM TO SEE THE ANSWERS.

STRING INPUT HINTS

There is another use of the keyword "LINE" beside starting a program at that line when saving a program. If the word "LINE" is used with a string "INPUT", the input prompt is given without the usual quotation marks. Try this program.

```
10 INPUT LINE a$
20 PRINT a$
```

The prompt for a\$ is just the "L" cursor.

Since there are no quotation marks, you can't move the cursor to the left of the first quotation mark and enter "STOP". You can only stop the input by entering capshift "B".

Suppose you want to print a string variable within an INPUT print line. By enclosing the string variable within parenthesis, the variable value of the string will be printed. Try this:

```
10 INPUT "Enter your name";LINE
  n$
20 INPUT "Enter your age ";(n$);
  a$
```

You will see that the second line prints the name you entered in the first line, and enters the age in a\$.

I can't take credit for these "discoveries". While the Timex-Sinclair Manual makes no mention of the other use of LINE, the Spectrum manual explains thoroughly. The second hint is from the October issue of YOUR SPECTRUM.



This is Ted Knyszek's 2068 rendition of Our Gang! He has been doing all of our front covers for quite some time. He is really into graphics. If you have a program for Timex or any other computer system that is about graphics, send a copy to Ted! I know he will appreciate it! His address is: 11611 Blossom Ave. Parma Hts., OH. 44230

Hope you all have a real nice Thanksgiving and I hope to see you all at the Dec. Eastside meeting! See inside for details!

FROM:

RANTOP The newsletter for:
THE GREATER CLEVELAND AREA SINCLAIR USERS GROUP
James G. DuPuy (Editor)
6514 Bradley Ave. (DOWN)
Parma, Ohio 44129



TO:



FIRST CLASS MAIL